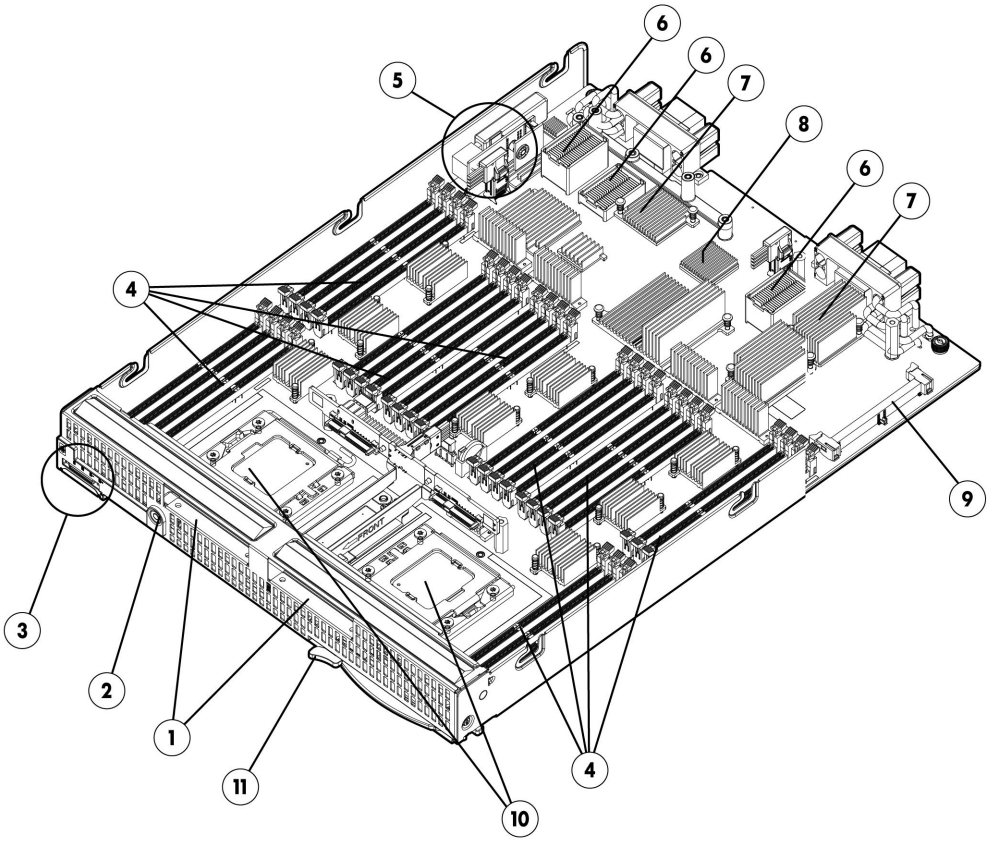
Overview



HP ProLiant BL620c Generation 7 (G7) Server Blade

1. Two hot-plug small form factor (SFF) SAS/SATA/SSD bays
2. Power on/standby button
3. UID, health, and network adapter LEDs
4. 32 RDIMM slots supporting up to 1.0TB of DDR3-1333 memory (operating up to 1066 MHz)
5. One USB 2.0 port, one MicroSD high capacity (SDHC) port, and one TPM 1.2 connector
6. Three PCIe Gen2 I/O expansion mezzanine slots
7. Four NC553i 10Gb FlexFabric adapter ports
8. iLO 3 Management adapter port
9. HP P410i Smart Array flash cache connector
10. One or two Intel® Xeon® 6500 or 7500 Series processors up to eight-cores each (below the hard drives)
11. Server release lever

What's New

- Support for the new HP Smart Array P712m Controller
- Support for the HP BLc NC360m NIC Adapter Option Kit

At A Glance

This document covers the HP ProLiant BL620c G7 server blade only. For more information on the HP BladeSystem c-Class Enclosure and HP BladeSystem c-Class Interconnects, please see the following:
HP BladeSystem c3000 Enclosure QuickSpecs:

Overview

http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
(Worldwide)
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
(Worldwide)
HP BladeSystem c-Class Interconnect and Mezzanine Components QuickSpecs:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

The HP ProLiant BL620c G7 Server Blade offers unmatched scalability, performance, and economics in a two-processor Intel® Xeon® server blade. Two models are now available, one optimized for the Intel® Xeon® E7-2800 series and the E7-8867L and the other optimized for the Intel® Xeon® 6500/7500 series. Fully utilizing the design architecture of the Intel® Xeon® 7500 chipset, up to two top performing 130W processors are supported along with 32 RDIMM slots providing 1.0TB (BL620c G7 Intel Xeon E7-2800/8867L models) and 512MB (BL620c G7 Intel Xeon 6500/7500 models) of memory for ultimate virtualization efficiency. The four included 10Gb FlexFabric converged network adapter ports with built-in autosensing 1Gb/10Gb Ethernet, FCoE, Flex-10, hardware-based accelerated iSCSI, iSCSI boot, and TCP/IP offload engine combined with the three PCIe Gen2 mezzanine expansion slots yield an outstanding 96Gb of total I/O bandwidth.

The BL620c G7 is also perfect for 2P applications requiring performance and features greater than typical dual processor (DP) Intel® Xeon® 5000 offerings. The scalability of the BL620c G7 offers up to 1000% the memory capacity and increased memory performance along with an extensive list of memory RAS features, 2,000% the embedded Ethernet bandwidth, 440% the virtual machines (VMs), 300% the on-board I/O expansion slots, and 440% the total I/O bandwidth than other 2P Intel® Xeon® servers available today.

Traditional multi-processor (MP) class server blades are typically unbalanced providing processor performance and density at the expense of proportional memory capacity and I/O bandwidth. As such, these unbalanced servers fail when faced with larger databases and higher-density virtualization applications. Today, you have a better alternative. By designing a balanced architecture, the BL620c G7 is a very progressive 2P MP blade offering that ensures that all subsystems can be used effectively under a broad range of enterprise applications and workloads. The 2P BL620c G7 along with the 4P BL680c G7 together provide a complete Intel® Xeon® portfolio creating a new class of scale-up HP ProLiant server blades delivering the reliability and performance you need to handle demanding workloads with confidence.

- Processor:
  - One or two Intel® Xeon® E7-2800/8867L series processors each up to 10 cores and 130 watts (BL620c G7 Intel Xeon E7-2800/8867L models)
    NOTE: All processors within the server must be identical.
  - One or two Intel® Xeon® 6500 or 7500 Series processors each up to 8 cores and 130 watts (BL620c G7 Intel Xeon 6500/7500 models)
    NOTE: All processors within the server must be identical.
  - Extensive list of 40 key system-wide availability features now including HP Memory Quarantine and Double Device Data Correction (DDDC)
    NOTE: DDDC is offered on the BL620c G7 Intel Xeon E7-2800/8867L models.
  - The new Advanced Core Disable feature allowing more control over enabling/disabling processor cores
  - Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) delivering robust encryption without the need for additional appliances or increased performance overhead for improved encryption performance and efficiency (BL620c G7 Intel Xeon E7-2800/8867L models)
  - Intel® 7500 chipset with two integrated memory controllers per processor for maximum system performance
  - Intel 7510 Scalable Memory Buffer providing up to 1.8W (maximum) and 4.4W (idle) power savings per each SMI (BL620c G7 Intel Xeon E7-2800/8867L models)
  - Intel Intelligent Power Technology including (BL620c G7 Intel Xeon E7-2800/8867L models):
    - Lower partial active power that automatically pleases processor, memory, and I/O controller into the lowest available power states to meet the current workload while minimizing performance impact

    - Lower idle power that allows idling cores to be reduced to near-zero power independent of other cores, reducing server idle power consumption
  - Meshed network of four Intel® QuickPath Interconnects (Intel® QPI) each up to 6.4GT/s (25.6GB/s data bandwidth) for point-to-point high speed links increasing bandwidth and lowering latency
  - Intel® Hyper-threading resulting in higher processing throughput and improved multi-threaded application performance
  - Intel® Turbo Boost Technology that can automatically operate the processor(s) at a faster frequency than the base operating frequency under certain circumstances.
  - Up to 30MB of L3 cache per processors increasing efficiency of cache-to-cache data transfers maximizing memory bandwidth while reducing latency through storing greater amount of data thus reducing data transfers to memory.
  - Intel® Virtualization Technology that assist virtualization software in generating more efficient virtualization solutions.
  - PCI Gen2 increasing bandwidth up to 4 GB/s on each x8 PCI Express Gen2 connection.
- Memory:
  - 1.0TB memory capacity via thirty-two (32) DDR3 registered DIMMs (RDIMM) slots operating up to 1066MHz (BL620c G7 Intel Xeon E7-2800/8867L models)
    NOTE: The DDR3 memory speed is a function of the processor Intel® QPI speed. See the "Memory" section below for details.
  - 512MB memory capacity via thirty-two (32) DDR3 registered DIMMs (RDIMM) slots operating up to 1066MHz (BL620c G7 Intel Xeon 6500/7500 models)
    NOTE: DDR3 memory speed is a function of the processor Intel® QPI speed. See the "Memory" section below for details.
  - 8GB, 16GB and 32GB 1.35V DDR3L RDIMM low power memory options providing up to a 0.15V power savings per each DIMM compared to standard 1.5V DDR3 RDIMMs (BL620c G7 Intel Xeon E7-2800/8867L models)
  - For maximum memory bandwidth, performance, and capacity, two integrated memory controllers per each processor that connect to a total of four Intel® Scalable Memory Buffers (SMB)
  - Memory availability features including:
    - Data bus ECC protection and advanced ECC / SDDC
    - Double Device Data Correction (DDDC) (BL620c G7 Intel Xeon E7-2800/8867L models)
    - HP Memory Quarantine (based on Intel MCA Recovery technology)
    - Demand and patrol scrubbing
    - DIMM address/control bus parity protection
    - Memory mirroring and memory failover
    - Rank sparring (online spare)
    - Intel® SMI lane and clock failover
    - Intel® SMI packet retry
    - Failed DIMM isolation
- Storage Controller:
  - Integrated SAS version 2.0 (6Gb) HP Smart Array P410i Controller with RAID 0 and 1.
    NOTE: The P410i is configured with no cache allowing the end user to select the desired cache option (if cache is desired in the first place).
    NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option.
  - P410i 512MB and 1GB flash backed write cache (FBWC) and Smart Array Advanced Pack (SAAP) options.
  - Optional Smart Array RAID mezzanine controllers (with BBWC and FBWC) for connection to external storage.
  - Two (2) slots for BBWC and/or FBWC battery options.
    NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.
  - Optional IO Accelerator cards for high performance I/O.
  - Optional P700m Smart Array Controller for direct attach and shared SAS storage external to the c-Class enclosures
  - Optional HP D2200sb PCIe Storage Blade for direct attached and shared storage within the c-Class enclosures
- Internal Drive Support:
  - Two (2) hot-plug small form factor (SFF) drive bays
  - Support for SAS, SATA, and SSD hot-plug hard drives

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

- Network Controller:
  - Four (4) embedded HP NC553i 10Gb FlexFabric adapter ports supporting autosensing 10Gb/1Gb Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot.
    NOTE: Fibre Channel over Ethernet (FCoE) capability requires the use of an HP Virtual Connect FlexFabric 10Gb/24-port Module or HP 10GbE Pass-Thru Module.
    - The embedded adapter ports are routed interconnect bays 1 and 2 (c7000) and interconnect bay 1 (c3000)
  - One (1) 10/100 network adapter port dedicated to iLO 3 Management
- Mezzanine Support:
  - Three (3) mezzanine expansion slots as follows:
    - Two (2) Type II (25 watts) x8 PCIe Gen2; mezzanine slots 2 and 3 supporting QDR IB, 4Gb and 8Gb FC, 10Gb FlexFabric, 10Gb Flex10, 10GbE, 1GbE, I/O accelerator cards, the Smart Array RAID controllers, and the PCI Pass-thru Expansion card.
      - Mezzanine slot's 2 ports are routed to interconnect bays 5,6,7,8 (c7000) and 3,4,3,4 (c3000)
      - Mezzanine slot's 3 ports are routed to interconnect bays 7,8,5,6 (c7000) and 3,4,3,4 (c3000)
    - One (1) Type I (15 watts) x4 PCIe Gen2; mezzanine slot 1 supporting 4Gb and 8Gb FC, 10Gb FlexFabric, 10Gb Flex10, 10GbE, 1GbE, and the I/O accelerator cards
      - Mezzanine slot's 1 ports are routed to interconnect bays 3,4,3,4 (c7000) and 2,2,2,2 (c3000)
    - NOTE: HP recommends 10Gb adapters be installed in a x8 PCIe slot for optimal performance.
    - NOTE: Type II slots accept both Type I or Type II cards. Type I slots accepted Type I cards only.
- Expansion Blade Support:
  - Up to two HP BladeSystem Expansion Blades (Ultrium Tape Blades, PCI Expansion Blade, and Storage Expansion Blade) are supported using the HP PCI Expansion Pass-thru mezzanine Card. One HP PCI Express Mezzanine Pass-Thru Card is required per Expansion Blade.
    NOTE: The PCI Express Mezzanine Pass-Thru Card(s) must be installed in mezzanine slots 2 and/or 3.
    NOTE: In a c3000 rack enclosure where the blades are installed horizontally, up to two expansion blades may installed in the two slots created by the mini divider in the top half of the enclosure with a BL620c G7 installed in the lower half of the enclosure.
    NOTE: In a c3000 tower and c7000 rack enclosure where the blades are installed vertically, two expansion blades may installed in the blade slots adjacent to the BL620c G7 by staking one on top of another via a blade coupler that is included with the PCI Express Mezzanine Pass-Thru Card and the expansion blades. If a single expansion blade is installed, it must be installed in the lower slot adjacent to the BL620c G7; a half-height server may be installed above the expansion blade.
- Internal USB and SD Support:
  - One (1) internal USB 2.0 connector for USB flash media drive keys
  - One (1) internal micro secure digital high capacity (SDHC) card slot
- Trusted Platform Module (TPM):
  - One (1) internal TPM 1.2 module connector
- Infrastructure Management:
  - This server blade requires the latest version of the Onboard Administrator firmware. This firmware release may also require other subsystem firmware upgrades. For information on the latest firmware versions, please see the Blades Firmware Maintenance website at: http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html
  - HP Integrated Lights-Out 3 (iLO 3) management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
  - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.

Overview

- Operating System Support:
  - Microsoft Windows, RHEL, SLES, Oracle Solaris, VMware, and Citrix XenServer
- Form Factor:
  - Full height, single wide server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures
- Enclosures:
  - HP offers two different c-Class server blade enclosures to meet your individual needs:
    - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 8 HP ProLiant BL620c G7 servers plugged vertically.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 4 HP ProLiant BL620c G7 servers plugged horizontally.
  - Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures.
  - For additional enclosure information, please see: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.
- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processors One or more of the following depending on model	Ten-Core Processors Intel® Xeon® E7-2870 (2.40GHz/10-core/30MB, 6.40GT/s QPI, 130W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Intel® Xeon® E7-2860 2.26GHz/10-core/24MB, 6.40GT/s QPI, 130W) Processor Intel® Xeon® E7-2850 (2.0GHz/10-core/24MB, 6.40GT/s QPI, 130W) Processor Intel® Xeon® E7-8867L (2.13GHz/10-core/30MB, 6.40GT/s QPI, 105W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Eight-Core Processors Intel® Xeon® E7-2830 (2.13GHz/8-core/24MB, 6.40GT/s QPI, 105W) Processor Intel® Xeon® E7-2820 (2.0GHz/8-core/18MB, 5.86GT/s QPI, 105W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Intel® Xeon® X7560 (2.26GHz/8-core/24MB, 6.40GT/s QPI, 130W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Intel® Xeon® X6550 (2.0GHz/8-core/18MB, 6.40GT/s QPI, 130W) Processor Intel® Xeon® L7555 (1.86GHz/8-core/24MB, 6.40GT/s QPI, 95W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Six-Core Processors Intel® Xeon® E7-2803 (1.73GHz/6-core/18MB, 4.80GT/s QPI, 105W) Processor NOTE: Offered as Configure-To-Order. See the Factory Integrated Models section for more details. Intel® Xeon® E6540 (2.0GHz/6-core/18MB, 6.40GT/s QPI, 105W) Processor Intel® Xeon® E7530 (1.86GHz/6-core/12MB, 5.86GT/s QPI, 105W) Processor Four-Core Processors Intel® Xeon® E6510 (1.73GHz/4-core/12MB, 4.80GT/s QPI, 95W) Processor NOTE: The Intel Xeon E7-2800/8867L series processors above are supported only on the BL620c G7 Intel Xeon E7-2800/8867L server models. NOTE: The Intel Xeon 6500/7500 series processors above are supported only on the BL620c G7 Intel Xeon 6500/7500 server models. NOTE: All processors within the server must be identical. NOTE: All servers support one or two processors. NOTE: The minimum processor configuration is one processor that must be installed in socket CPU1. NOTE: If upgrading an existing BL620c G7 server to a different processor, the server's ROM must be flashed to the latest BIOS prior to the upgrade. NOTE: All processors support Intel® Hyper-threading. NOTE: All processors support Intel® Turbo Boost Technology except the E7-2803 and E6510.

Standard Features

Upgradeability

Upgradeable to two processors
NOTE: All processors within the server must be identical.
NOTE: All servers support one or two processors.
NOTE: The minimum processor configuration is one processor that must be installed in socket CPU1.
NOTE: If upgrading an existing BL620c G7 server to a different processor, the server's ROM must be flashed to the latest BIOS prior to the upgrade.
NOTE: The Intel Xeon E7-2800/8867L series processors above are supported only on the BL620c G7 Intel Xeon E7-2800/8867L server models.
NOTE: The Intel Xeon 6500/7500 series processors above are supported only on the BL620c G7 Intel Xeon 6500/7500 server models.

Cache Memory
One or more of the following depending on model

Up to 30MB level 3 cache memory (BL620c G7 Intel Xeon E7-2800/8867L models)

Up to 24MB level 3 cache memory (BL620c G7 Intel Xeon 6500/7500 models)

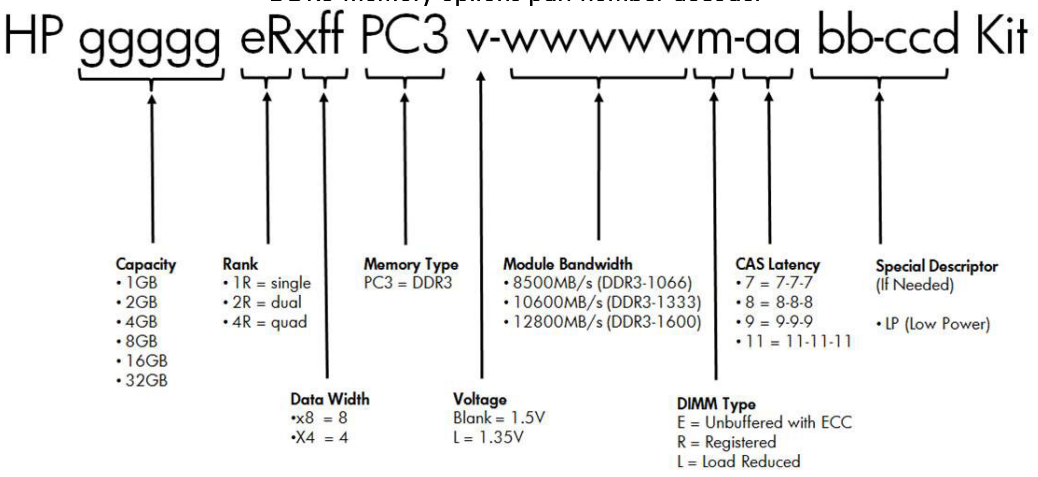
Chipset

Intel® 7500 chipset

Memory

Type	DDR3-1333 and DDR3-1066 Registered DIMMs (RDIMM) (operating up to 1066MHz)
Standard	32GB (4 x 8GB) (BL620c G7 Intel Xeon E7-2800/8867L models only) 8GB (2 x 4GB) (BL620c G7 Intel Xeon 6500 models only)
Maximum	1.0TB (32 x 32GB RDIMMs) (BL620c G7 Intel Xeon E7-2800/8867L models) 512GB (32 x 16GB RDIMMs) (BL620c G7 Intel Xeon 6500/7500 models)

DDR3 memory options part number decoder



NOTE: See the "Memory" section for memory guidelines, installation rules, and additional general information.

Standard Features

Network Controllers

Four (4) integrated HP NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot.

NOTE: Fibre Channel over Ethernet (FCoE) capability requires the use of an HP Virtual Connect FlexFabric 10Gb/24-port Module or HP 10GbE Pass-Thru Module.

NOTE: The Flex-10 capability requires the use of an HP Virtual Connect Flex-10 10Gb Ethernet module or HP 10GbE Pass-Thru Module.

One (1) 10/100 network adapter port dedicated to iLO 3 Management

I/O Expansion Slots

Three (3) mezzanine expansion slots as follows:

- Two (2) Type II (25 watts) x8 PCIe Gen2
- One (1) Type I (15 watts) x4 PCIe Gen2

NOTE: Type II slots accept both Type I or Type II cards. Type I slots accepted Type I cards only.

Integrated Manageability

HP Integrated Lights-Out 3 (iLO 3)

Storage Controller

Integrated SAS version 2.0 (6Gb) HP Smart Array P410i Controller with RAID 0 and 1.
NOTE: The P410i is configured with no cache allowing the end user to select the desired option (if cache is desired in the first place).
NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option.
P410i 512MB and 1GB flash backed write cache (FBWC) options.
Optional Smart Array RAID mezzanine controllers (with BBWC and FBWC) for connection to external storage.
NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.
Optional IO Accelerator cards for high performance I/O.
Optional HP D2200sb PCIe Storage Blade for direct attached and shared storage within the c-Class enclosures

Maximum Internal Storage
One or more of the following depending on model

Hot-plug SAS	2.0TB	2 x 1.0TB drives
Hot-plug SATA	2.0TB	2 x 1.0TB drives
Hot-plug SAS SSD	1.6TB	2 x 800GB drives
Hot-plug SATA SSD	800GB	2 x 400GB drives

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

Graphics

Integrated ATI RN-50 1280 x 1024 x 16M color

Resolution Color Depths	1280 x 1024, 16.7M , 64k, 256,16
	1024 x 768, 16.7M, 64k, 256, 16
	800 x 600, 16.7M, 64k, 256, 16
	640 x 480, 16.7M, 64k, 256, 16

Standard Features

Fibre Channel		Up to three (3) optional 4Gb and/or 8Gb Fibre Channel HBA mezzanine adapters (Brocade, Emulex and QLogic options).
Compatible SAN		HP ProLiant BL620c G7 server blades are optimized for HP MSA, EVA, and XPHP and are compatible with select third party SANs. See the blade storage page for more details at http://h18004.www1.hp.com/products/blades/components/c-class-sans.html.
HP Insight management software	HP Service Pack for ProLiant	HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) version 5 provide a new, comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support on each Service Pack for ProLiant. The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM version 5 and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application has been re-written to provide a more straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP will recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline. The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdepencies, when determining the correct updates and order of update deployment. The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from: www.hp.com/go/spp/download. More information can be found: http://www.hp.com/go/spp and http://www.hp.com/go/hpsum
	HP Insight Foundation	Insight Foundation is being baselined at version v8.70 which means the following: • Its Media Kit (contains 2 SmartStart CDs, the Firmware DVD, and the Management DVD) will continue to ship with all supported ProLiant

	G7 or earlier BTO servers until the last supported server is no longer shipping. • The Media Kit will not be updated past version 8.70. • ProLiant G7 or earlier CTO servers are able to order the Media Kit with the understanding that the media is not updated. Please check specific server QuickSpecs for availability of CTO Kit. • PSP and Firmware DVD downloads will be updated through 2Q 2012 at the HP Insight Foundation Suite for ProLiant downloads tab: http://www.hp.com/go/foundation Customers are urged to use the replacement product, HP Service Pack for ProLiant, instead of Insight Foundation Suite which is found at these location: • www.hp.com/go/spp • www.hp.com/go/spp/download
HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO.
HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol. HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.
HP Matrix Operating Environment	The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). NOTE: For more information, visit: http://www.hp.com/go/matrixoe

Standard Features

High Performance Clusters	HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html
	HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
	HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. HP HPC Linux Value Pack

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Oracle Solaris
VMware Server
Citrix XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, including how to purchase from HP, please visit our OS Support Site at: http://www.hp.com/go/ossupport

Availability

Memory

- HP Memory Quarantine (based on Intel MCA Recovery technology). In conjunction with the operating system support, allows a server to recover from uncorrectable memory errors which would have otherwise caused a system crash.
- Double Device Data Correction (DDDC). DDDC provides the ability to save a DIMM from being replaced due to a bad dram device (BL620c G7 Intel Xeon E7-2800/8867L models).
- Data Bus ECC protection for automatic correction from a single data bit error and detection of double data error bits.
- Advanced ECC/SDDC provides continued memory operation in the event of a single memory device failure and allows removal of a single DRAM from the memory map if it exhibits a failure and recovers its data into a new device.
  - Supports for both x4 and x8 Intel® SDDC.
- Demand Scrubbing writes corrected data back to the memory once a correctable error is detected

on a read transaction.

- DIMM Address/Control Bus Parity Protection provides a means to detect and protect command and address errors.
- Memory Failover uses a mirrored DIMM once a failed DIMM in a mirrored set is detected.
- Memory Mirroring provides a copy of memory stored with dynamic failover in case of failure within socket (intra-socket) memory mirroring.
  - The system will operate in non-hemisphere mode when mirroring is enabled.
- Rank Sparring (On Line Spare) provides dynamic failover to a spare DIMM rank or spare rank pair behind the same memory controller. Cannot be enabled concurrently with memory mirroring. NOTE: HP offers the rank sparing rather than DIMM sparing as rank sparing uses less spare memory resulting in less overhead.
- Failed DIMM Isolation identifies a specific failing DIMM lockstep pair thereby enabling the user to replace only the failed DIMM pair. Identifies a single DIMM for correctable errors and DIMM pair for uncorrectable errors.

Virtualization

- Intel® VT-x (FlexMigration, FlexPriority, and Extended Page Tables) provides:
  - Platform control between the VMM and guest OSs for faster, more reliable and secure transfers.
  - VM migration features that enhance flexibility for failover, load balancing, disaster recovery, and maintenance.
- Intel® VT-x Real Mode & Pause Loop Exiting (BL620c G7 Intel Xeon E7-2800/8867L models):
  - Real Mode allows guests to operate in real mode, removing the performance overhead and complexity of an emulator.
  - Pause Loop Exiting provides detection of spin locks in guest software and helps avoid lock-holder preemption to reduce overhead and improve performance.
- Intel® VT-d (Intel® Virtualization Technology for Directed I/O) enables the VMM to assign specific I/O devices to specific guest OSs improving security and availability.

Mezzanine options and I/O

- Optional dual-port Fibre Channel mezzanine cards for redundant SAN connections.
- Optional dual-port InfiniBand mezzanine cards for redundant high performance connections.
- Four embedded Ethernet adapter ports for redundant LAN connections.
- Multiple mezzanine I/O expansion slots each supported multiple data paths routed to redundant interconnect modules.
- Network Adapter Teaming (Bonding) provides network fault tolerance, transmit load balancing, and switch-assisted load balancing.

Processor/Chipset

- Processor Internal Sensors & Thermal Control protection against over-temperature conditions.
- Cache parity/ECC protects cache data from accidental data corruption due to particle hits.
- Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, ECC, parity, cache, other.
- Enhanced MCA handling & error logging builds upon the original Machine Check Architecture to: offers more "banks" and increased "resolution" for reporting errors that cause MCA events and 2) sets check flags for the OS to poll.
- External Bus Error Recovery (ECC) enables automatic correction from a single data bit error and detection of double data error bits on the memory data bus.
- Corrupt Data Containment tags faulty data before it is consumed (often called data poisoning) to limit the impact to the currently running program and to greatly reduce the need to reset the

system.
- On-Die Error Protection protects registers from particle hits.

Storage

- Two hot-plug SAS/SATA/SSD drive bays.
- Integrated HP Smart Array P410i Controller with RAID 0 and 1 standard
- Integrated HP Smart Array P410i Controller upgradeable firmware with recovery ROM capability
- HP Smart Array P410i flash backed write cache (FBWC) options to 1GB.
- Optional multiple Smart Array RAID mezzanine controllers (with BBWC and FBWC) for direct attach and shared SAS storage external to the c-Class enclosure.
- Optional HP D2200sb Storage Blade for direct attached and shared storage within the c-Class enclosure.

Intel® QuickPath Interconnect (QPI)

- QPI Link Retry restarts as cycle when a failure is detected on the link.
- QPI Clock Failover redirects the forwarded clock to one of the two failover clock lanes in the event of a forwarded clock failure.
- QPI Self-Healing enables a QPI link to map a failed lane and downshift from full to ½ width (or ½ width to ¼ width) QPI link if there are errors on the link.
- QPI Cycle Redundancy Checking (CRC) automatically detects data errors using a checksum of either 8 bits or 16 bits.
- QPI Poisoning tags an erroneous packet with a "poisoned bit" on the QPI fabric.
- QPI Lane Failover identifies a faulty lane within data paths removing them from operation reducing command/address errors.

Server Blade Enclosure Infrastructure

- Up to 10 hot-plug redundant Active Cool fans per enclosure.
- Up to 6 hot-plug high efficiency redundant power supplies per enclosure.
- Dual grid power providing redundant rack enclosure power feeds to the enclosure.
- Up to eight interconnect modules per enclosure providing four simultaneous redundant fabrics for FlexFabric, Virtual Connect Ethernet, Fibre Channel, InfiniBand, iSCSI, SAS, etc.
- Optional enclosure redundant Onboard Administrator system management module.

Standard Features

Industry Standard Compliance

- ACPI 2.0 Compliant
- PCI 2.2 Compliant
- Microsoft® Logo certifications
- USB 2.0
- Secure Digital 2.0
- TMP 1.2
- IEEE (see the NC553i Technical Specifications section)
- Advanced Encryption Standard (AES)
- Triple Data Encryption Standard (3DES)
- SNMP
- SSL 2.0
- Active Directory v1.0 (Windows 2003)
- IPMI 2.0
- DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)

Security

- Intel® AES-NI (BL620c G7 Intel Xeon E7-2800/E8867L models)
- Power-on password
- Administrator's password
- Integrated Lights-Out 3 with:
  - 12 customizable user accounts
  - SSL encryption
  - Secure Shell version 2
  - Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
  - AES and RC4 encryption of video
  - Disable via a global setting
- Keyboard password
- External USB port enable/disable
- Network server mode
- Serial interface control
- TPM (Trusted Platform Module) 1.2 option

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services on your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Standard Features

HP Enterprise Configurator	The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem
Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP ProLiant and BladeSystem Services can do for you
HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three packages - Optimized Care Package, Standard Care Package, and Basic Care Package - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.

Optimized Care Package

Supports maintaining servers at optimum performance availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure
Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

3-Year HP Critical Advantage L3 for c3000/c7000 enclosure + 3-Year HP Critical Advantage L3 for Blade server
Provides end-to-end infrastructure support solution for business critical applications running on virtualized/x86 infrastructures, enabling the customers to cost effectively build, operate, and continuously improve their IT environment
http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW.pdf

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network
HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches to facilitate proper implementation of network protocols and access to advanced features.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf

Additional Services: Virtualization Services - Strategy, Design, Transition, Operation, Continual Service Improvement.

Service and Support

Standard Care Package	Package that maintains high level of server availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure
Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network
HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches to facilitate proper implementation of network protocols and access to advanced features
http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf

3-Year, HP 6 hour Hardware Support Onsite Call-to-Repair Service for c3000/c7000 enclosure + 3-Year, HP 6 hour Hardware Support Onsite Call-to-Repair Service for Blade server
Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf

3-Year , HP 24x7 Software Support for Insight Control
Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf

1-Year HP Proactive Select 30 Credit
Provides a flexible way to purchase HP best-in-class consultancy and technical services
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Additional Services: Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); Microsoft or Linux or VMware education courses; +60 Proactive Select Credits, Factory Express.

Basic Care Package	Delivers minimum recommended support service level

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure
Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for c3000/c7000 enclosure + 3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for Blade server
Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

3-Year , HP 24x7 Software Support for Insight Control

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf

1-Year HP Proactive Select 10 Credit
Provides a flexible way to purchase HP best-in-class consultancy and technical services
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Additional Services: Startup Blade System c-Cass Enhanced Network Service; Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); +30 Proactive Select Credits, Factory Express

Insight Remote Support	The packages include HP Insight Remote Support that uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnoses, and problem resolution. It is available at no additional cost to all warranty, HP Care Pack Service, and service agreement customers.
For more information	To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/bladesystem

Intel Xeon E7-2800/8867L Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

HP ProLiant BL620c G7 E7-2860 1P 32GB-R Server 643763-B21 HP ProLiant BL620c G7 E7-2850 1P 32GB-R Server 643764-B21 HP ProLiant BL620c G7 E7-2830 1P 32GB-R Server 643765-B21	Processor(s) One of the following depending on model	(1) Intel® Xeon® E7-2860 (2.26GHz/10-core/24MB, 6.40GT/s QPI, 130W) Processor (1) Intel® Xeon® E7-2850 (2.0GHz/10-core/24MB, 6.40GT/s QPI, 130W) Processor (1) Intel® Xeon® E7-2830 (2.13GHz/8-core/24MB, 6.40GT/s QPI, 105W) Processor
	Cache Memory	24MB L3 cache
	Memory	32GB (4 x 8GB) DDR3-1333 RDIMMs (operating up to 1066MHz)
	Network Controllers	Four (4) integrated HP NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot One (1) 10/100 network adapter port dedicated to iLO 3 Management
	Storage Controller	Integrated SAS version 2.0 (6Gb) HP Smart Array P410i Controller with RAID 0 and 1 NOTE: The P410i is configured with no cache allowing the end user to select the desired cache option (if cache is desired in the first place). NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option. Two (2) cache slots for BBWC and/or FBWC battery options. NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.
	Hard Drives	No drives included; supports up to two (2) hot-plug SFF SAS/SATA/SSD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 800GB
	Optical Drive	None
	Form Factor	Up to 4 blades in the HP BladeSystem c3000 enclosure Up to 8 blades in the HP BladeSystem c7000 enclosure

Models

Intel Xeon 6500 Models

HP ProLiant BL620c G7 X6550 1P 8GB-R P410i Hot Plug SAS/SATA 2 SFF Server 588964-B21	Processor(s) One of the following depending on model	(1) Intel® Xeon® X6550 (2.0GHz/8-core/18MB, 6.40GT/s QPI, 130W) Processor (1) Intel® Xeon® E6540 (2.0GHz/6-core/18MB, 6.40GT/s QPI, 105W) Processor (1) Intel® Xeon® E7530 (1.86GHz/6-core/12MB, 5.86GT/s QPI, 105W) Processor (1) Intel® Xeon® E6510 (1.73GHz/4-core/12MB, 4.80GT/s QPI, 95W) Processor
HP ProLiant BL620c G7 E6540 1P 8GB-R P410i Hot Plug SAS/SATA 2 SFF Server 588965-B21	Cache Memory One of the following depending on model	18MB L3 cache (X6550 and E6540) 12MB L3 cache (E7530 and E6510)
HP ProLiant BL620c G7 E7530 1P 8GB-R P410i Hot Plug SAS/SATA 2 SFF Server 588963-B21	Memory	8GB (2 x 4GB) DDR3-1333 RDIMMs (operating up to 1066MHz)
	Network Controllers	Four (4) integrated HP NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot One (1) 10/100 network adapter ports dedicated to iLO 3 Management
HP ProLiant BL620c G7 E6510 1P 8GB-R P410i Hot Plug SAS/SATA 2 SFF Server 588966-B21	Storage Controller	Integrated SAS version 2.0 (6Gb) HP Smart Array P410i Controller with RAID 0 and 1 NOTE: The P410i is configured with no cache allowing the end user to select the desired cache option (if cache is desired in the first place). NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option. Two (2) cache slots for BBWC and/or FBWC battery options. NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.
	Hard Drives	No drives included; supports up to two (2) hot-plug SFF SAS/SATA/SSD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB; SATA SSD: 800GB
	Optical Drive	None
	Form Factor	Up to 4 blades in the HP BladeSystem c3000 enclosure Up to 8 blades in the HP BladeSystem c7000 enclosure

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on Factory Integrated Model product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order servers must start with a Factory Integrated Model (CTO) Blade.
NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration (Select a configurable Blade)

HP Models	HP ProLiant BL620c G7 Configure-to-order Server NOTE: This server supports the Intel Xeon 6500/7500 series processors.	600332-B21
	HP ProLiant BL620c G7 Configure-to-order Server NOTE: This server supports the Intel Xeon E7-2800/8867L series processors.	643786-B21
	Configurable model ships with:	
	Four (4) integrated HP NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot	
	One (1) 10/100 network adapter port dedicated to iLO 3 Management	
	One (1) Integrated SAS version 2.0 (6Gb) HP Smart Array P410i Controller with RAID 0 and 1 NOTE: The P410i is configured with no cache allowing the end user to select the desired cache option (if cache is desired in the first place). NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option.	
	Two (2) cache slots for BBWC and/or FBWC battery options. NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.	
	Two (2) small form factor hot-plug SAS/SATA/SSD hard drive bays	
	Three (3) I/O expansion slots	
	One (1) integrated Lights-Out 3	
	Integrated USB, MicroSDHC, and TPM connectors	

Step 2: Choose Required Options (one of the following from each list unless otherwise noted):

HP Processors	NOTE: The BL620c G7 supports one or two processors. NOTE: The minimum processor configuration is one processor that must be installed in socket CPU1. NOTE: All processors within the server must be identical. NOTE: All Configure-to-Order processor kits contain one (1) processor. NOTE: If two processors are desired, select one xxxxxx-L21 kit and one xxxxxx-B21 kit.	
	Ten-Core Processors	
	HP BL620c G7 Intel® Xeon® E7-2870 (2.40GHz/10-core/30MB/130W) FIO Processor Kit	643749-L21
	HP BL620c G7 Intel® Xeon® E7-2860 (2.26GHz/10-core/24MB/130W) FIO Processor Kit	643751-L21
	HP BL620c G7 Intel® Xeon® E7-2850 (2.0GHz/10-core/24MB/130W) FIO Processor Kit	643753-L21

	HP BL620c G7 Intel® Xeon® E7-8867L (2.13GHz/10-core/30MB/105W) FIO Processor Kit	643761-L21
	Eight-Core Processors	
	HP BL620c G7 Intel® Xeon® E7-2830 (2.13GHz/8-core/24MB/105W) FIO Processor Kit	643755-L21
	HP BL620c G7 Intel® Xeon® E7-2820 (2.0GHz/8-core/18MB/105W) FIO Processor Kit	643757-L21
	HP BL620c G7 Intel® Xeon® X7560 (2.26GHz/8-core/24MB/130W) FIO Processor Kit	603608-L21
	HP BL620c G7 Intel® Xeon® X6550 (2.0GHz/8-core/18MB/130W) FIO Processor Kit	589082-L21
	HP BL620c G7 Intel® Xeon® L7555 (1.86GHz/8-core/24MB/95W) FIO Processor Kit	603612-L21
	Six-Core Processors	
	HP BL620c G7 Intel® Xeon® E7-2803 (1.73GHz/6-core/18MB/105W) FIO Processor Kit	643759-L21
	HP BL620c G7 Intel® Xeon® E6540 (2.0GHz/6-core/18MB/105W) FIO Processor Kit	589084-L21
	HP BL620 G7 Intel® Xeon® E7530 (1.86GHz/6-core/12MB/105W) FIO Processor Kit	603610-L21
	Four-Core Processor	
	HP BL620c G7 Intel® Xeon® E6510 (1.73GHz/4-core/12MB/105W) FIO Processor Kit	589086-L21
HP Memory	NOTE: All DDR3 memory option kits consist of one RDIMM per kit. NOTE: PC3L is a low-voltage memory and is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models. NOTE: See the "Memory" section for memory guidelines, installation rules, and additional general information.	
	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit NOTE: This memory kit is only available on the BL620c G7 BL620c G7 Intel Xeon 6500/7500 series models.	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	604506-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	627812-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21

HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit NOTE: This memory kit is only available on the Intel Xeon BL620c G7 E7-2800/8867L series models.	627814-B21

Step 3: Choose Additional Options for Factory Integration

NOTE: For additional options, including server blade enclosures interconnect and mezzanine options and power subsystem options; please see the Core Options and Additional sections below and the following:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
HP BladeSystem c-Class Interconnect and Mezzanine Components QuickSpecs:
http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html
http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Core Options

NOTE: For additional "Core Options" and "Additional Options" please see the options sections below.

HP Ethernet Mezzanine Options	Gigabit Ethernet Mezzanines	
	HP NC325m PCI Express Quad Port Gigabit Server Adapter	416585-B21
	HP NC360m Dual Port 1GbE BL-c Adapter NOTE: The HP NC360m is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	HP NC382m PCI Express Dual Port Multifunction Gigabit Server Adapter	453246-B21
	10 Gigabit Ethernet Mezzanines NOTE: A 10 Gigabit Ethernet adapter is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 2-4 (HP BladeSystem c3000 Enclosure). NOTE: Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory. NOTE: A 10 Gigabit Ethernet adapter will down speed to 1Gb if paired with a 1GbE interconnect. NOTE: HP recommends 10Gb adapters be installed in an x8 PCIe slot for optimal performance.	
	HP NC532m Dual Port 10GbE Multifunction BL-c Adapter	467799-B21
	HP NC542m Dual Port Flex-10 10GbE BL-c Adapter	539857-B21
	HP NC552m 10Gb 2-port Flex-10 Ethernet Adapter	610609-B21
	HP NC553m 10Gb 2-port FlexFabric Adapter	613431-B21
HP Fibre Channel Mezzanine Options	4Gb Fibre Channel mezzanine adapters	
	Emulex LPe1105 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403621-B21
	QLogic QMH2462 4Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	403619-B21
	8Gb Fibre Channel mezzanine adapters	
	Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	456972-B21
	QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem	451871-B21
	HP BLc Brocade 804 8Gb Fibre Channel Host Bus Adapter	590647-B21

Core Options

HP Processors

NOTE: The BL620c G7 supports one or two processors.
NOTE: The minimum processor configuration is one processor that must be installed in socket CPU1.
NOTE: All processors within the server must be identical.
NOTE: All -B21 processor kits listed below contain one (1) processor.
NOTE: If upgrading an existing BL620c G7 server to a different processor, the server's ROM must be flashed to the latest BIOS prior to the upgrade.

Ten-Core Processors	
HP BL620c G7 Intel® Xeon® E7-2870 (2.40GHz/10-core/30MB/130W) Processor Kit	643749-B21
HP BL620c G7 Intel® Xeon® E7-2860 (2.26GHz/10-core/24MB/130W) Processor Kit	643751-B21
HP BL620c G7 Intel® Xeon® E7-2850 (2.0GHz/10-core/24MB/130W) Processor Kit	643753-B21
HP BL620c G7 Intel® Xeon® E7-8867L (2.13GHz/10-core/30MB/105W) Processor Kit	643761-B21
Eight-Core Processors	
HP BL620c G7 Intel® Xeon® E7-2830 (2.13GHz/8-core/24MB/105W) Processor Kit	643755-B21
HP BL620c G7 Intel® Xeon® E7-2820 (2.0GHz/8-core/18MB/105W) Processor Kit	643757-B21
HP BL620c G7 Intel® Xeon® X7560 (2.26GHz/8-core/24MB/130W) Processor Kit	603608-B21
HP BL620c G7 Intel® Xeon® X6550 (2.0GHz/8-core/18MB/130W) Processor Kit	589082-B21
HP BL620c G7 Intel® Xeon® L7555 (1.86GHz/8-core/24MB/95W) Processor Kit	603612-B21
Six-Core Processors	
HP BL620c G7 Intel® Xeon® E7-2803 (1.73GHz/6-core/18MB/105W) Processor Kit	643759-B21
HP BL620c G7 Intel® Xeon® E6540 (2.0GHz/6-core/18MB/105W) Processor Kit	589084-B21
HP BL620 G7 Intel® Xeon® E7530 (1.86GHz/6-core/12MB/105W) Processor Kit	603610-B21
Four-Core Processor	
HP BL620c G7 Intel® Xeon® E6510 (1.73GHz/4-core/12MB/105W) Processor Kit	589086-B21

Core Options

HP Memory	NOTE: All DDR3 memory option kits consist of one RDIMM per kit. NOTE: PC3L is a low-voltage memory and is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models. NOTE: See the "Memory" section for memory guidelines, installation rules, and additional general information.	
	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon 6500/7500 series models.	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	604506-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	627812-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	627814-B21
HP Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. NOTE: Two drives are required for RAID 0 and 1. NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-B21
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581286-B21
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-B21
	HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3 yr Warranty Hard Drive	627117-B21

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	605835-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)	
SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive	625609-B21
HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
6G SAS Hot Plug Enterprise Performance Solid State Drives	
HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632494-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632492-B21
6G SAS Hot Plug Enterprise Mainstream Solid State Drives	
HP 800GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632506-B21
HP 400GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632504-B21
HP 200GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632502-B21
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives	
HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636597-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636595-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	636593-B21
NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html (Worldwide)	

HP Insight Software	Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	T9074BAE
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	452148-B22
	HP Insight Management Media Kit NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html (Worldwide)	
	HP Insight Control for Linux	
	HP Insight Control for Linux including 1yr 24x7 Support Electronic License NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate instead.	TC213AAE
	HP Insight Control for Linux including 1yr 24x7 Support Single Server License	TC209A
	HP Insight Control for Linux Media Kit NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately. NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button).	TC208A
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button). NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional License Kits, please see the QuickSpecs at:	

http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html (Worldwide)

HP Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management

HP iLO Advanced for BladeSystem including 1yr 24x7 Support Electronic License	TA851AAE
HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License	512488-B21

NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.
NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service
NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html (Worldwide)

HP Insight Control server deployment

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License	T9082AAE
HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License	452151-B21

NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.
NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits please see the Insight Control QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html (Worldwide)

Additional Options

High Performance Clusters	**HP Cluster Management Utility**	
	HP Cluster Management Utility Flexible License NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.	QL803A
	HP Cluster Management Utility Media NOTE: Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html (Worldwide)	433257-B21
	HP HPC Linux Value Pack	
	HP High Performance Computing Linux Value Pack 1 Processor Flexible License NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.	TC293B
	HP High Performance Computing Linux Value Pack Media Kit NOTE: This part number can be used to purchase media including software and documentation, which will be delivered to the customer. NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/13485_div/13485_div.html (Worldwide)	TC294A
HP Storage Controllers	NOTE: The P410i is configured with no cache allowing the end user to select the desired cache option (if cache is desired in the first place). NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option. NOTE: The server supports up to a combined total of two (2) battery cache options for the P410i and/or optional Smart Array RAID controllers.	
	HP Smart Array P700m Controller	
	HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller	508226-B21
	HP Smart Array P711m Controller	
	HP Smart Array P711m/1G 6Gb FBWC 4-ports Ext Mezzanine SAS Controller	513778-B21
	NOTE: The P700m 512MB cache adds RAID 1+0 and 5.	
	HP Smart Array P712m Controller NOTE: The HP Smart Array P712m Controller is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	
	HP Smart Array P712m/256 6Gb 2-ports Int/2-ports Ext Mezzanine SAS Controller	488348-B21
	HP Smart Array P712m/ZM 2-ports Int PCIe x8 SAS Controller	484299-B21
	Optional Upgrades	

Additional Options

	HP 512MB Flash Backed Write Cache NOTE: This is an option for the HP Smart Array P410i Controller (P410i is standard integrated controller).	534916-B21
	HP 1GB Flash Backed Cache NOTE: This is an option for the HP Smart Array P410i Controller (P410i is standard integrated controller).	534562-B21
	HP Smart Array P-Series Low Profile Battery NOTE: Supports the HP Smart Array P700m Controller.	452348-B21
	HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License	516471-B21
	NOTE: The above HP Smart Array Advanced Pack and any above cache option are required to enable Smart Array Advanced Pack features on the P410i. For more information go to: http://www.hp.com/go/saap.	
	NOTE: The Smart Array Advanced Pack is hosted on the P410i Smart Array Controller hardware firmware stack.	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide) (Smart Array P700m Controller) http://h18000.www1.hp.com/products/quickspecs/14035_div/14035_div.html (Smart Array P711m Controller) http://h18000.www1.hp.com/products/quickspecs/13296_div/13296_div.html (Smart Array P712m Controller) http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html (Worldwide) (Smart Array Advanced Pack)	
HP I/O Expansion Options	HP 640GB IO Accelerator for BladeSystem c-Class	BK836A
	HP 320GB IO Accelerator for BladeSystem c-Class	AJ878B
	NOTE: Please see the QuickSpecs for technical specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13220_div/13220_div.html (Worldwide)	
HP c-Class Mezzanines	HP InfiniBand Mezzanine Options	
	HP 4X QDR QLogic InfiniBand Dual Port Mezzanine HCA for c-Class BladeSystem	583210-B21
	HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem	592519-B21
	HP BL c-Class SB40c PCI Express Mezzanine Pass Thru Option Kit	431643-B21
	NOTE: The HP PCI Express Mezzanine Pass-Thru Card is required to support the HP Ultrium Tape Blades and the PCI Expansion Blade. Up to two Ultrium Tape and/or PCI Expansion Blades are supported per server mix and match. NOTE: The HP PCI Express Mezzanine Pass-Thru Card can be placed in mezzanine slot 2 and/or 3.	

Additional Options

HP Ultrium Tape Blades	HP LTO-4 SB1760c Tape Blade	AQ697A
	HP LTO-5 SB3000c Tape Blade	BS580A
	NOTE: The HP PCI Express Mezzanine Pass-Thru Card (P/N 431643-B21) is required to support the Ultrium Tape Blades with the BL620c G7. Up to two storage blades are supported per server mix and match (Ultrium Tape, PCI Expansion Blades, and/or Storage Expansion Blades). NOTE: The HP PCI Express Mezzanine Pass-Thru Card can be placed in mezzanine slot 2 and/or 3.	
	HP D2200sb Storage Blade	AP880A
	NOTE: The HP PCI Express Mezzanine Pass-Thru Card (P/N 431643-B21) is required to support the HP D2200sb PCIe Storage Blade with the BL620c G7. Up to two storage blades are supported per server mix and match (Ultrium Tape, PCI Expansion Blades, and/or Storage Expansion Blades). NOTE: The HP PCI Express Mezzanine Pass-Thru Card can be placed in mezzanine slot 2 and/or 3. NOTE: Please see the HP s D2200sb PCIe Storage Blade QuickSpecs for technical specifications and additional information at: http://h18006.www1.hp.com/storage/bladesystem/index.html.	
HP Expansion Blade	HP BLc PCI Expansion Blade	448018-B21
	NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. NOTE: The HP PCI Express Mezzanine Pass-Thru Card (P/N 431643-B21) is required to support the HP PCI Expansion Blade with the BL620c G7. Up to two expansion blades are supported per server mix and match (Ultrium Tape, PCI Expansion Blades, and/or Storage Expansion Blades). NOTE: The HP PCI Express Mezzanine Pass-Thru Card can be placed in mezzanine slot 2 and/or 3. NOTE: Please see the HP PCI Expansion Blade QuickSpecs for technical specifications and additional information at http://h18004.www1.hp.com/products/blades/expansion/index.html.	
HP USB and SD Options	HP USB 2-Button Optical Scroll Mouse	DC172B
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 2GB USB Flash Media Drive Key Kit	608447-B21
	NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	
	HP 4GB Micro SDHC Flash Media Kit	647444-B21
	NOTE: Blank SD media devices are supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization.	

Additional Options

HP Security - TPM	HP Trusted Platform Module Option	488069-B21
	NOTE: The BL620c G7 server includes a Trusted Platform Module (TPM) connector for an optional TPM 1.2 upgrade. The TPM 1.2 option is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of TPM version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server operating Windows Server 2008 has not been tampered with while the system was offline.	
	NOTE: For more information about TPM, including a white paper, go to: http://www.hp.com/go/TPM.	
	NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.	
	NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	

HP Care Pack Services	NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	Hardware Services On-site Service	
	HP 3 year 4 hour 13x5 BL6xxc Server Blade Hardware Support	UK108E
	HP 3 year 4 hour 24x7 BL6xxc Server Blade Hardware Support	UK109E
	HP 3 year 6 hour 24x7 Call to Repair BL6xxc Server Blade Hardware Support	UK110E

Memory Subsystem Architecture

For maximum memory bandwidth, performance, and capacity, each Intel® Xeon® E7-2800/8867L and 6500/7500 series processor socket contains two memory controllers. Each memory controller connects to two Intel® Scalable Memory Buffers (SMB) for a total of four SMBs per processor. Each SMB connects to four RDIMMs for a grand total of sixteen RDIMMs per installed processor (32 total RDIMMs per BL620c G7 server).

Maximum memory capacity is a function of the server model:

- The BL620c G7 server models supporting Intel Xeon E7-2800/8867L processors includes the new Intel® 7510 Scalable Memory Buffer supporting up to 32GB DDR3 RDIMMs providing 1.0TB of memory (32GB RDIMMs x 32 DIMM slots).
- The BL620c G7 server models supporting Intel Xeon 6500/7500 processors support up to 16GB DDR3 RDIMMs providing 512MB of memory (16GB RDIMMs x 32 DIMM slots).

All RDIMMs will operate at the highest possible speed for a given processor. Memory speed is not affected by number of RDIMMs or ranks. However, memory speed is a function of the processor QPI bus speed per the following:

- Processors with a QPI speed of 6.40GT will operate memory at 1066MHz
- Processors with a QPI speed of 5.86GT will operate memory at 978MHz
- Processors with a QPI speed of 4.80GT will operate memory at 800MHz

DDR3 and DDR3L Memory Population Guidelines

An overview of the RDIMM installation guidelines are summarized below. For detailed memory configuration rules and guidelines, please see the BL620c G7 user guide at: www.hp.com/support and the Online DDR3 Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

1. Install only HP BL620c G7 supported DDR3 and DDR3L RDIMMs.
2. RDIMMs must be installed for processor 1.
3. Populate RDIMM slots for a processor only if the processor is installed.
4. To maximize performance in multi-processor configurations, distribute the total memory capacity between all processors as evenly as possible.
5. The minimum configuration is two RDIMMs installed on processor 1.
6. RDIMMs must be installed in pairs with identical characteristics. When possible, for configuration simplicity, HP recommends using RDIMMs with identical part numbers throughout the system.
7. For best performance, HP recommends that RDIMM pairs be populated in sequence by letter designation. Install RDIMM pair (4A, 5A) first, followed by RDIMM pair (12B, 16B), RDIMM pair (2C, 7C), RDIMM pair (10D, 14D), RDIMM pair (3E, 6E), RDIMM pair (11F, 15F), and RDIMM pair (1G, 8G).
8. When installing mixed rank RDIMMs for any processor, RDIMMs with the highest number of ranks must be installed in the white RDIMM connector locations. This guarantees proper electrical signaling on the DDR3 channel since RDIMMs with higher rank counts present larger electrical loading on the DDR3 channel and must be populated at the end point of the channel.
9. 1.5V DDR3 and 1.35V DDR3L RDIMMs may be installed within the same socket. In this case, all RDIMMs on that socket will operate at 1.5V.
10. The BL620c G7 supports memory hemisphere mode (for a high-performance memory interleaving technology) as well as several advanced memory modes (AMP) including advanced ECC, online spare, and mirrored memory. Please see the BL620c G7 user guide at: www.hp.com/support for a description of each of these features and their memory configuration guidelines.
11. There are several additional recommended steps for memory performance optimization, please see the BL620c G7 user guide at: www.hp.com/support for a complete list.

Standard Memory

32GB (4 x 8GB) of dual-rank DDR3-1066 RDIMMs (BL620c G7 Intel Xeon E7-2800/8867L models).
8GB (2 x 4GB) of dual-rank DDR3-1066 RDIMMs (BL620c G7 Intel Xeon 6500/7500 models).

Standard Memory Plus Optional Memory

Memory

Up to 832GB of memory is available with the installation of optional DDR3 RDIMM memory expansion kits (BL620c G7 Intel Xeon E7-2800/8867L models).
Up to 464GB of memory is available with the installation of optional DDR3 RDIMM memory expansion kits (BL620c G7 Intel Xeon 6500/7500 models).

Model Standard Memory Replaced with Optional Memory

Up to 1.0TB of memory is available with the removal of standard memory and the installation of optional DDR3 RDIMM memory expansion kits (BL620c G7 Intel Xeon E7-2800/8867L models).
Up to 512MB of memory is available with the removal of standard memory and the installation of optional DDR3 RDIMM memory expansion kits (BL620c G7 Intel Xeon 6500/7500 models).

BL620c G7 Intel Xeon E7-2800/8867L Server Model Memory Configurations

Memory		Processor 1 RDIMM Slots (Processor 2 has the same DIMM slot numeration, but all slots are empty)							
Standard	32GB total	1G	2C	3E	4A	5A	6E	7C	8G
		Empty	Empty	Empty	8GB	8GB	Empty	Empty	Empty
		9H	10D	11F	12B	13H	14D	15F	16B
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
		Processor 1 RDIMM Slots (Processor 2 has the same RDIMM configuration)							
Optional	416GB per CPU (832GB total)	1G	2C	3E	4A	5A	6E	7C	8G
		32GB	32GB	32GB	8GB	8GB	32GB	32GB	32GB
		9H	10D	11F	12B	13H	14D	15F	16B
		32GB	32GB	32GB	32GB	32GB	32GB	32GB	8GB
		Processor 1 RDIMM Slots (Processor 2 has the same RDIMM configuration)							
Maximum	512GB per CPU (1.0TB total)	1G	2C	3E	4A	5A	6E	7C	8G
		32GB	32GB	32GB	32GB	32GB	32GB	32GB	32GB
		9H	10D	11F	12B	13H	14D	15F	16B
		32GB	32GB	32GB	32GB	32GB	32GB	32GB	32GB

BL620c G7 Intel Xeon 6500/7500 Server Model Memory Configurations

Memory

Memory		Processor 1 RDIMM Slots (Processor 2 has the same RDIMM slot numeration, but all slots are empty)							
Standard	8GB total	1G	2C	3E	4A	5A	6E	7C	8G
		Empty	Empty	Empty	4GB	4GB	Empty	Empty	Empty
		9H	10D	11F	12B	13H	14D	15F	16B
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
		Processor 1 RDIMM Slots (Processor 2 has the same RDIMM configuration)							
Optional	232GB per CPU (464TB total)	1G	2C	3E	4A	5A	6E	7C	8G
		16GB	16GB	16GB	4GB	4GB	16GB	16GB	16GB
		9H	10D	11F	12B	13H	14D	15F	16B
		16GB	16GB	16GB	16GB	16GB	16GB	16GB	16GB
		Processor 1 RDIMM Slots (Processor 2 has the same RDIMM configuration)							
Maximum	256GB per CPU (512GB total)	1G	2C	3E	4A	5A	6E	7C	8G
		16GB	16GB	16GB	16GB	16GB	16GB	16GB	16GB
		9H	10D	11F	12B	13H	14D	15F	16B
		16GB	16GB	16GB	16GB	16GB	16GB	16GB	16GB

HP ProLiant BL620c G7 memory options:

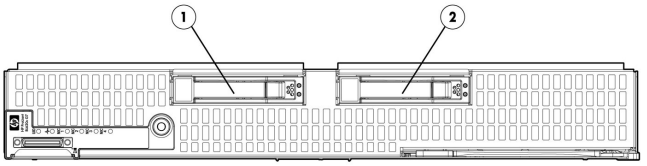
HP Memory — Registered DIMMs (RDIMMs)

Following are the BL620c G7 memory options available from HP:

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon 6500/7500 series models.	500656-B21
HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	604506-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	627812-B21
HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
HP 32GB (1x32GB) Quad Rank x4 PC3L-8500 (DDR3-1066) Registered CAS-7 LP Memory Kit NOTE: This memory kit is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.	627814-B21

NOTE: All DDR3 memory option kits consist of one RDIMM per kit.
NOTE: PC3L is a low-voltage memory and is only available on the BL620c G7 Intel Xeon E7-2800/8867L series models.
NOTE: For detailed memory configuration rules and guidelines, please see the BL620c G7 user guide at: www.hp.com/support and use the Online DDR3 Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

1-2 2 x SFF SAS/SATA/SDD hot-plug hard drives



Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: SAS, SATA, and/or SSD drives cannot be mixed within the server.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
900GB 6G SAS 10K 600GB 6G SAS 10K 450GB 6G SAS 10K 300GB 6G SAS 15K 300GB 6G SAS 10K 146GB 6G SAS 15K 72GB 6G SAS 15K	2	1-2	Smart Array P410i Controller

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1.0TB 6G SAS 7.2K 500GB 6G SAS 7.2K	2	1-2	HP Smart Array P410i Controller

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1.0TB 3G SATA 7.2K 500GB 3G SATA 7.2K	2	1-2	HP Smart Array P410i Controller

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

	Quantity Supported	Position Supported	Controller
400GB 3G SATA MLC SFF 200GB 3G SATA MLC SFF 100GB 3G SATA MLC SFF	4	1-4	HP Smart Array P410i Controller

Storage

6G SAS Hot Plug Enterprise Performance Solid State Drives

	Quantity Supported	Position Supported	Controller
400GB 6G SAS SLC 200GB 6G SAS SLC	2	1-2	HP Smart Array P410i Controller

6G SAS Hot Plug Enterprise Mainstream Solid State Drives

	Quantity Supported	Position Supported	Controller
800GB 6G SAS MLC 400GB 6G SAS MLC 200GB 6G SAS MLC	2	1-2	HP Smart Array P410i Controller

System Unit	Dimensions (H x W x D)	Full height, single-wide server blade: 14.46 x 2.19 x 20.09 in (36.73 x 5.49 x 51.03 cm)	
	Weight (approximate)	Maximum (all hard drives, DIMMs, mezzanine cards, and processors installed)	24.24lbs (11.00kg)
		Minimum (two hard drives, four DIMMs, no mezzanine cards, and two processors installed)	17.9lbs (8.12kg)
	Power Specifications	For power specifications including input requirements, BTU rating, and power supply output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html (Worldwide) HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html (Worldwide) To review typical system power ratings use the HP BladeSystem Power Sizer available at: http://www.hp.com/go/bladesystem/powercalculator.	
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-Operating	-30° to 60°C (-22° to 140°F), maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 85% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-Operating	10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class	

Enclosures QuickSpecs located at:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

Smart Array P410i Controller	Disk Drive and Enclosure Interface	6G SAS (Serial Attached SCSI) 3G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	Two (2) internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x4 5G PCIe Gen2 provides 2GB/s maximum bandwidth.
	SAS Speed	x2 6G SAS provides 1.2GB/s maximum bandwidth.
	Cache Memory	72-bit 1GB cache; ECC protection, capacitor-backed
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	2 TB (2 x 1 TB)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 0 (Striping) RAID 1 (Mirroring) NOTE: RAID 0 and 1 require two drives installed in the server. NOTE: RAID 0 and 1 are supported on the P410i without the need for a cache option.
	Upgradeable Firmware	Upgradeable firmware with recovery ROM capability

HP NC553i10Gb FlexFabric Adapter	Type	Integrated KR 10GbE with FlexFabric (Flex-10, FCoE, accelerated iSCSI, iSCSI boot, 10GbE, 1GbE, TCP/IP offload engine)
	Network Processor	Blade Engines 3 (BE3)
	Data Transfer Method	x8 PCI Express 2.0
	Network Transfer Rate	20Gbps per port full duplex only (theoretical maximum value) NOTE: Each port is autosensing 1Gb / 10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. NOTE: Each port on the NC553i adapter transmits from the server at 20Gbps (theoretical) full duplex.
	IEEE Compliance	802.1p QoS, 802.1Q VLAN tagging, 802.3ad link aggregation, 802.3ap 10GBase-KR, and 802.3x flow control
	Standard Features	• ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing • 9K Jumbo frames (4K Jumbo frames when in FCoE mode) • Microsoft Windows Receive Side Scaling (RSS) • FCoE or accelerated iSCSI mode • iSCSI boot • Flex-10 support • TCP/IP offload engine

- 10Gb Ethernet ort 1Gb Ethernet autosensing
- Microsoft TCP chimney compliant
- Supports 8 Physical Functions (PF)
- Supports 128 Virtual Functions (VF):
  - Up to 32 VFs per PF
  - Support 128 MAC address
- Traffic Shaping and QoS across each VF and PF:
- NIC Fine-grain QoS 10 Mbps to 10Gbps in steps of 10Mbps
- HBA fine-grain QoS 1000 IOPs to 500,000 IOPs in steps of 1000 IOPS
- On-chip VM-VM switching
- Traffic steering and isolation
- Hardware based filtering for 128 VLANIDs with QinQ tag filtering
- Protection against denial-of-service attacks & malfunctioning VMs

HP Integrated Lights-Out 3 (iLO 3)	Architecture	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core operating at 250MHz
	Upgradeability	Option firmware upgradeable via Flash ROM
	Video Support	1600 x 1200 DVR max resolution
	Interfaces	One Ethernet network connection (10/100Mb/s)
	Memory	128-MB DDR with ECC
	Operating System Support	Microsoft Windows 2008 R2
		Microsoft Windows 2008 (32 bit and 64 bit)
		Microsoft Windows Server 2008 Standard Edition (32bit and 64bit)
		Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit)
		Microsoft Windows Server 2003 and Windows Server 2003 R2, and Windows Server 2003 for Extended Systems Standard Edition, Enterprise Edition
		Red Hat Enterprise Linux 5.4 (32 bit and 64 bit)
		SUSE LINUX Enterprise Server 11 (32bit and 64bit)
		SUSE LINUX Enterprise Server 10 (32bit and 64bit)
		VMware ESX 4.0
		VMware ESX 3.5.0
		Microsoft Windows 2008 R2
	Client System Support	Microsoft Windows 7
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
		Red Hat Enterprise Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10

	Client Browser Support	Microsoft Internet Explorer 8
		Microsoft Internet Explorer 7
		Microsoft Internet Explorer 6
		Firefox 3.5 (on supported Windows and Linux systems)
		Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
		Secure Socket Layer
		Secure Shell version 2
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
		AES encryption of video
		RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2003)
	Driver Support	HP ProLiant iLO3 Management Controller Driver Package
	Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML
Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes (1,000 MB). Actual formatted capacity is less.